

What We Know About Learning - Implications for Teaching

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DOD Conference on Civilian
Education and Professional
Development

Last Year's Conference

SCORM?

Three Key Elements of the
Performance Simulation Cycle

Three Major Options for
Creating a Learner Centered
Institution

My Orientation

- Training
- Education
- Motivation

Intelligence

How to raise smart rats.

Creating conditions for learning to maximize intelligence.

One rat; no toys

One rat, with toys

One rat, toys changed weekly

Several rats, toys changed weekly

Several rats, toys changed weekly, each rat removed from cage daily and lovingly stroked for fifteen minutes.

At the end of the experimental period all rats given learning tasks to accomplish.

Learning curve goes up steadily from first to fifth condition. Fifth condition generates 25% greater gain in “rat intelligence.”

Your Brain

Your brain is plastic across the life span.

Powerful learning occurs when all five senses are engaged.

Adequate time is needed for input, assimilation and output.

Emotional well being is essential to intellectual functioning.

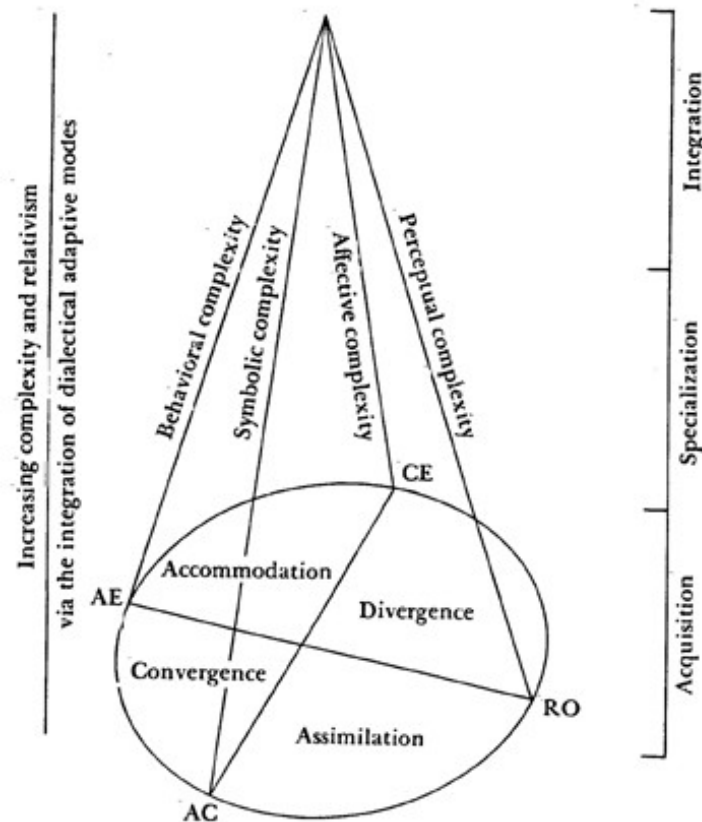
Your Brain K-12 Research

- Body, mind, and brain exist in dynamic unity
- Our brain is a social brain
- The search for meaning is innate
- The brain establishes meaning through patterning
- Emotions are crucial to patterning
- Learning involves conscious and unconscious processes

K 12 Research Continued

- Complex learning is enhanced by challenge, inhibited by threat
- Every brain is uniquely organized, with resulting differences in talent and performance.

Figure 5. The Experiential Learning Theory of Growth and Development



Specialization Versus Integration in Adult Development

Kolb, D. A. *Learning styles and disciplinary differences*. In Chickering, A. W., (1981) The Modern American College. San Francisco: Jossey Bass.

Surface Learning

- Relies on short term memorizing
- Facts, data, concept, information
- Highlight texts, make lists, create outlines, develop mnemonics
- Rehearse, alone or with friends
- Ask questions to get the right answers

Deep Learning

- Seeks meaning
- Builds on, connects with, challenges, prior knowledge and competence
- Reflects on our mental models
- Applies new information to varied life settings

Mindful Learning

- Open to new information
- Constructs own categories
- Reconciles diverse perspectives
- Chooses how to pursue learning
- Devises own assignments, challenges, products, and performances

Ellen Langer, *The Power of Mindful Learning*, in Chickering, A.W. and Schlossberg, N. K. *Getting the Most Out of College*, 2nd edition, Prentice Hall, 2002, pp. 77-78.

“Tacit” Knowledge and Competence Requires Practice

Novices

Trained to produce “right answers.”

Reason from laws or principles

Experts

Put causal models against own experiences

Draw on stories and shared experiences

Work from socially constructed, experience based, understandings, appropriate for specific circumstances.

“Tacit” Knowledge and Competence Requires Practice

High performance knowledge is always connected to specific activities, contexts, and cultures. Effective application of conceptual organizers depends on tacit knowledge.

Ask learners to create responses, with minimal cues, repeatedly, over time, in varied contexts and applications.

Ask learners to represent information, concepts, and principles, in varied formats: diagrams, metaphors, analogies, equations, formulas.

“Tacit” Knowledge and Competence Requires Practice

“Tacit knowledge comes from rich experiences in varied situations, and from repeated practice over time.”

Environments for Learning

- Connect with real world problems
- Build on and incorporate prior and current experiences
- Provide for choice and independent learning
- Legitimize and encourage diverse ways of knowing

Environments Continued

- Facilitate and support collaboration
- Encourage interaction
- Incorporate reflection
- Specify time on task expectations

Learning activities

- Individual learning contracts
- Group projects
- Service learning
- Community based research
- Internships and apprenticeships

Learning Activities Continued

- Case studies
- Problem based learning
- Journals and reflective exercises
- Criterion referenced evaluation for products and performances
- Formative self assessment and teacher assessment
- Narrative evaluations